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RESPONSIVENESS SUMMARY

**SAMPLING AND ANALYSIS PLAN
HOT SPOT REMOVAL**

**Rocky Flats Environmental Technology Site
(Operable Unit No. 1)**

**U. S. Department of Energy
Rocky Flats Environmental Technology Site
Golden, Colorado**

September 1994

ADMIN RECORD

A-DU01-000688

SECTION 1 INTRODUCTION

Attached are responses to the EPA's and CDPH&E's comments on the Sampling and Analysis Plan (SAP), Hot Spot Removal, September 1994. The SAP is intended to identify specific sampling requirements for the hot spot removal. Pursuant to these comments, the SAP has been revised and finalized (Final Sampling and Analysis Plan, Hot Spot Removal, September, 1994).

SECTION 2 RESPONSES TO EPA'S COMMENTS

Comment:

Page 6, Introduction. The account of the discovery and investigation of the hot spots given here is not entirely consistent with that described in the OUI Phase III RFI/RI or with previous discussions between DOE and EPA. DOE needs to verify and correct if necessary, the events that have occurred and their corresponding dates. The well number cited should be changed to 38291. Such information will not be necessary for the sampling and analysis plan but is required for the PAM.

Response:

The timetable of the discovery and investigation was verified and corrected. The well number was changed from 3892 to 38921.

Comment:

Page 9, Section 3.0. It is stated here that the excavation will be conducted using simple hand tools, but during informal staff discussions, the use of a backhoe was also mentioned. If a backhoe or other equipment is to be used, this must be specified. This section also refers to a health and safety plan for the details of aggressive dust control measures to prevent contaminant migration during the excavation. A brief summary of these measures must be included in this text and a specific document reference must also be included for further details.

Response:

Details of the specific tools to be used in the removal are included in the Work Package. In addition, the text of the SAP was edited to include a backhoe as a potential tool. The appropriate dust control measure for a "minor excavation" (less than 50 cubic yards) is "area spraying with water" (Paragraph 2.1.2.2, PPCD, DOE, February 1992.) This will be the method employed in the hot spot removal. This reference is cited in Section 3.0 of the SAP, "Sampling Approach and Requirements".

Comment:

Pages 9 and 10. Section 3.1 The field radiological screening that is described here needs to specify more exactly the methods and equipment to be used and the rationale for

these choices. This is a key opportunity to not only remove radiological contaminants, but to also better define and understand the procedures and equipment limitations involved with such activities.

First of all, it is also necessary to investigate, and remove if detected, two additional potential hot spots that are identified on Figure 4-17 of the OU 1 RFI/RI Report. These are locations 881-18/19 and 881-16/17, both of which were reported to have significantly elevated uranium levels and both of which lie in or near the former drum storage area of 119.1. Even if the initial radiological screenings do not indicate the presence of these hot spots, limited confirmation sampling should be employed at the two locations.

It is recommended that the first step in the radiological screening be to use the FIDLER to identify the precise location of the hot spots. Readings at each location should be recorded at that time. Step two would then utilize the HPGe instrument directly over each hot spot location, deployed as low to the ground as possible so as to limit its field of view as much as possible. The HPGe would provide isotopic identification and better sensitivity. Next it might be useful to use the truck mounted HPGe, raised higher from the surface to obtain one wide field of view reading that would include all hot spots in 119.1. The wide view reading should be repeated again after all sampling for comparison purposes.

Once these initial field readings are taken and recorded, characterization samples should be collected from the surface of each hot spot at the suspected location of maximum radiological contamination and analyzed for radionuclides. This would enable laboratory analytical results to be directly compared with the in-situ field readings of both the FIDLER and HPGe. Such information should be gathered whenever possible, to better document and validate use of these field instruments.

Response:

DOE/RFFO has recently conducted a follow-up FIDLER survey of the IHSS 119.1 area and has reestablished the location of the two hot spots previously identified in a 1987 surface soil characterization study (specifically 881-16/17 and 881-18/19). The locations were staked and surveyed, and the Field Germanium Gamma Spectroscopy System (FGSS) was used to quantify the radionuclide-specific total activities.

The specific radiological screening for the hot spot removal is noted in Section 3.1 of the SAP, "Field Screening of Excavated Area". Comparisons of radiation detection methodology with true radionuclide analytical data will be discussed in the Final Removal Report.

Comment:

Page 10, paragraph 2. It is stated here that 2-6 inches of additional material will be removed after the FIDLER no longer detects the presence of radiological contamination.

What is the rationale for this? Removal of this additional material would generate a larger volume of material that may need to be treated or disposed of. It would also make a direct comparison of FIDLER and HPGe results impossible, since this additional removal would occur between readings from the different instruments.

Response:

The additional soil will be removed in order to ensure the isotopes are removed to background. Additional FIDLER surveys will be done before the FGGS is used. Two to six inches will be removed, depending upon whether a shovel or backhoe is used.

Comment:

Table 3-1 Sampling and Analysis Methods. This table does not list radiological analysis for the 9 waste characterization samples. As stated above, these samples would provide a valuable comparison to readings from the FIDLER and HPGe detectors. Without such, it would also have to be assumed that all the soils removed are radiologically contaminated, since they are coming from a hot spot area. On the other hand, it is also possible that previous sampling has removed the radiological contamination at some of the hot spots, and if confirmed by analytical results, this material would not have to be managed as a mixed or low level waste.

Response:

The radiological analysis for the waste characterization samples was left out of Table 3-1 in error. It has been added again.

Comment:

Appendix B, Page 11. The input parameters listed here were run by EPA using the DEFT program and resulted in an output of 3 samples rather than the output of 6 samples as listed on this page. If only 3 confirmation samples per hot spot are needed, the total number of confirmation samples would be reduced from 28 to 14. Also, this section must include a discussion of how the input parameters for action level and standard deviation were determined, for both confirmation and characterization samples.

Response:

The sample numbers were run again, with different input parameters. See the Data Quality Objectives section of Appendix B for further discussion.

SECTION 3 RESPONSES TO CDPH&E'S COMMENTS

Comment:

Date of Original Detection of Hot Spots - The first paragraph of the introduction states that elevated concentrations of radiological contamination were first detected during a routine radiological survey in November 1991. This date is not consistent with the Final Phase III RFI/RI report, which states that the hot spot was first detected in August 1992.

Response:

The detection date was changed from November 1991 to August 1992 in the final SAP.

Comment:

Excavation Method - The Division was informed by EG&G staff during a briefing when the Sampling and Analysis Plan was hand delivered that excavation would be conducted using a backhoe to loosen the soil and a hand shovel to remove and containerize the soil. This is not consistent with the text, which states that simple hand tools will be used. The Division does not consider a backhoe a simple hand tool. The range of potential methods of soil hot spot excavation and corresponding dust control measures must be clearly identified in the PAM.

Response:

Details of the specific tools to be used in the removal are included in the Work Package. In addition, the text of the SAP was edited to include a backhoe as a potential tool. The following resolution addresses dust control.

Comment:

Dust Control - With regard to appropriate dust control measures, the Division expects DOE to follow the approved Final Plan for Prevention of Contaminant Dispersion (PPCD) in scoping dust control measures. Specific dust control measures to be implemented during the excavation must be included in the PAM.

Response:

The appropriate dust control measure for a "minor excavation" (less than 50 cubic yards) is "area spraying with water" (Paragraph 2.1.2.2, PPCD, DOE, February 1992.) This will be the method employed in the hot spot removal. The Health and Safety Plan (HSP) for the hot spot removal states the appropriate dust control measure. In addition, this is cited in Section 3.0 "Sampling Approach and Requirements", of the SAP.

Comment:

Field Survey Instruments - The instruments used for determining when contamination has reached background levels during the excavation and the method for estimating background levels must be specified in the PAM. Also, the Division recommends that minimum detectable activity levels of the field screening instruments be discussed in the PAM.

Response:

Section 3.1 of the SAP, "Field Screening of Excavated Area", has been clarified. Comments on the PAM are not addressed in this SAP Responsiveness Summary.

Comment:

Confirmation Sample Locations - The Division recommends DOE consider replacing the simple random sampling scheme with a stratified random sampling scheme that can insure that samples are collected randomly from the rim, side and bottom regions of the excavation.

Response:

Due to the small size and shallow depth of the removal, a more appropriate simple random sampling scheme was chosen.

Comment:

Excavated Material Hazardous Waste Characterization - Based on the limited information presented in this plan, the Division believes that the sampling and analysis proposed for excavated material hazardous waste characterization is over scoped. The Division recommends DOE staff review the requirements for characterizing excavated soils and

eliminate unnecessary or redundant analysis. The Division staff will work closely with DOE to ensure that waste characterization is conducted efficiently.

Response:

The additional characterization will be conducted for Land Disposal Restriction (LDR) requirements for the disposal of excavated waste and to verify that the hazardous waste meets the Envirocare's waste acceptance criteria. (There is currently a disposal contract in place with Envirocare.)

Comment:

EPA Decision Error Feasibility Trials (DEFT) Software - The basis and rationale for selection of the number of samples to collect should be documented in the PAM. The title of the computer program that DOE utilized in calculating the number of samples is irrelevant. A number of assumptions and site specific parameters are necessary to estimate the number of verification samples needed. The Division has not reviewed the applicability of the DEFT software nor approved its use.

Response:

All of the input, output and decision parameters used in the execution of the DEFT software were included in the QAA section (Appendix B) of the final SAP, while the name of the program was included for reference/confirmation purposes. The DEFT software used in determining the number of samples required for confirmation and characterization purposes is rapidly becoming an industry standard for facilitating the DQO process.